

# Why Market Integration of Demand Resources?



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**CEC Load Management Workshop**  
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**California ISO**  
Your Link to Power



# Clear Public Policy Direction... EPAct 2005

## Congress Ordered:

-  Unnecessary barriers to DR participation in energy, capacity and Ancillary Service markets shall be eliminated
-  Time-based pricing and other Demand Response shall be encouraged
-  The deployment of technologies that enable customers to participate in Demand Response systems shall be facilitated

# Public Policy Alignment... Federal & State

## **FERC Order 890:**

*Demand response must be evaluated on a comparable basis to services provided by generation resources in meeting mandatory reliability standards, providing ancillary services and planning the expansion of the transmission grid*

## **California Energy Action Plan:**

*The loading order identifies energy efficiency and demand response as the State's preferred means of meeting growing energy needs*

# CA Policies & Investments are Driving Integration

## **Energy Action Plan**

- The “Loading Order” implies that DR must be a viable/reliable and available resource to be a suitable substitute for supply-side resources.

## **Advanced Meter Infrastructure**

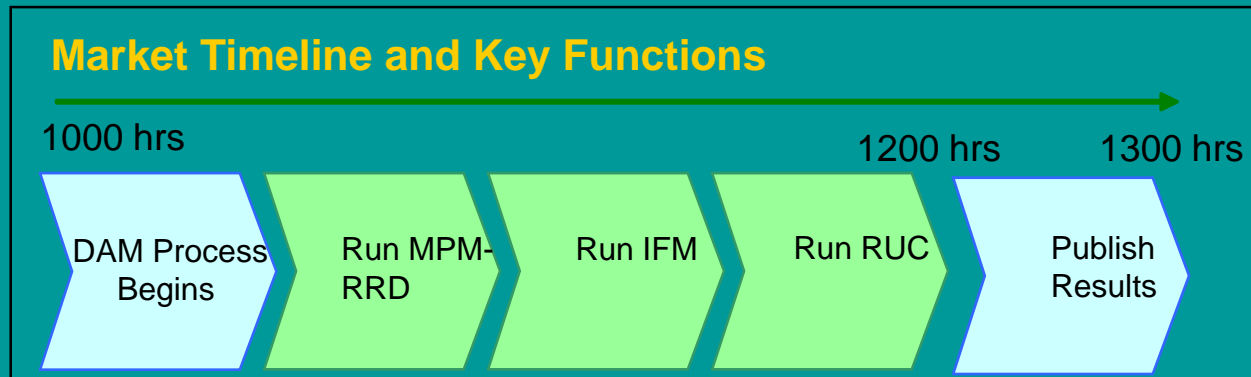
- Investment in AMI is tied, in part, to economic benefits derived from DR capability. Without DR market integration, these benefits will not materialize.

## **CAISO Market Redesign & Technology Upgrade (MRTU)**

- Under MRTU, the wholesale market will provide DR resources with comparable treatment and the enhanced operating flexibility afforded supply-side resources.



# CAISO - Day Ahead Market Timeline



Receive bids from Market Participants

Use Full Network Model to Evaluate and mitigate bids with Market Power

Clear bid-in Supply with bid-in Demand plus procure 100% of the Ancillary Service requirement

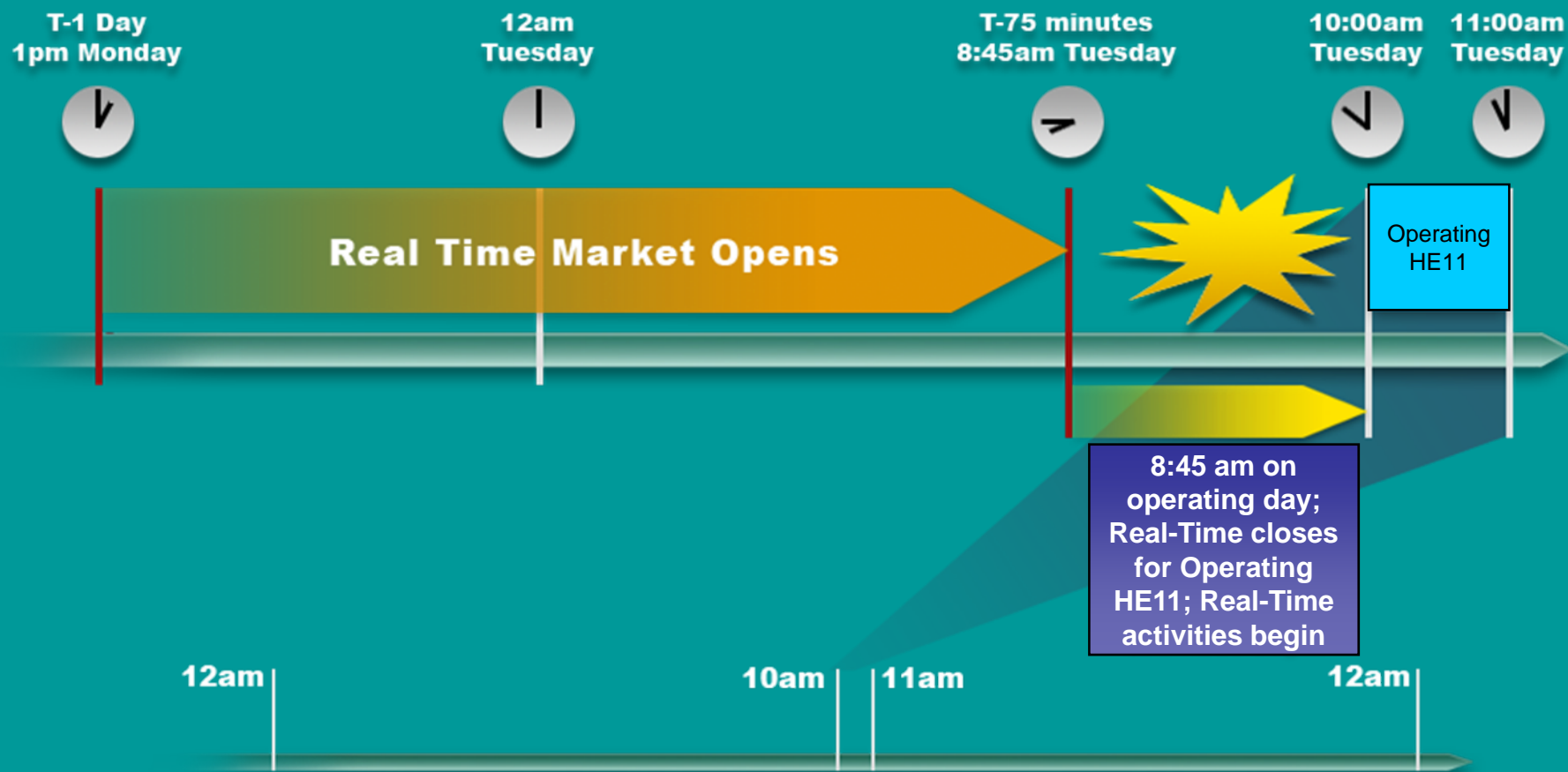
Procure additional capacity, based on CAISO Forecast Capacity Demand

DA Market Results published to CAISO Market Results Interface






# CAISO – Hour Ahead Market Timeline

## Bidding for 10am – 11am Operating Hour



# Demand Response Resources provide value

## DR Resources translate into three categories:

-  Reduce the Load Forecast and Peak Demand
-  Provide Reliability Services to the Grid
-  Enable Emergency Response

***DR programs/products/tariffs should clearly provide one or more of these capabilities and be closely coordinated with the CAISO to ensure market and reliability benefits are realized.***

# Operational Benefits from Integrating DR

## **Reduces the Load Forecast and Peak Demand**

- Lowers the number of resources that must be committed to meet the CAISO's forecast of demand
- Frees up additional capacity on the system

## **Provides Reliability Services to the Grid**

- Adds new resources capable of providing balancing energy and operating reserves for maintaining reliability
- Helps to resolve transmission emergencies
- Prevents “firm load” shedding via “controlled” load-shedding



# Market Benefits from Integrating DR

## **Reduces the Load Forecast and Peak Demand**

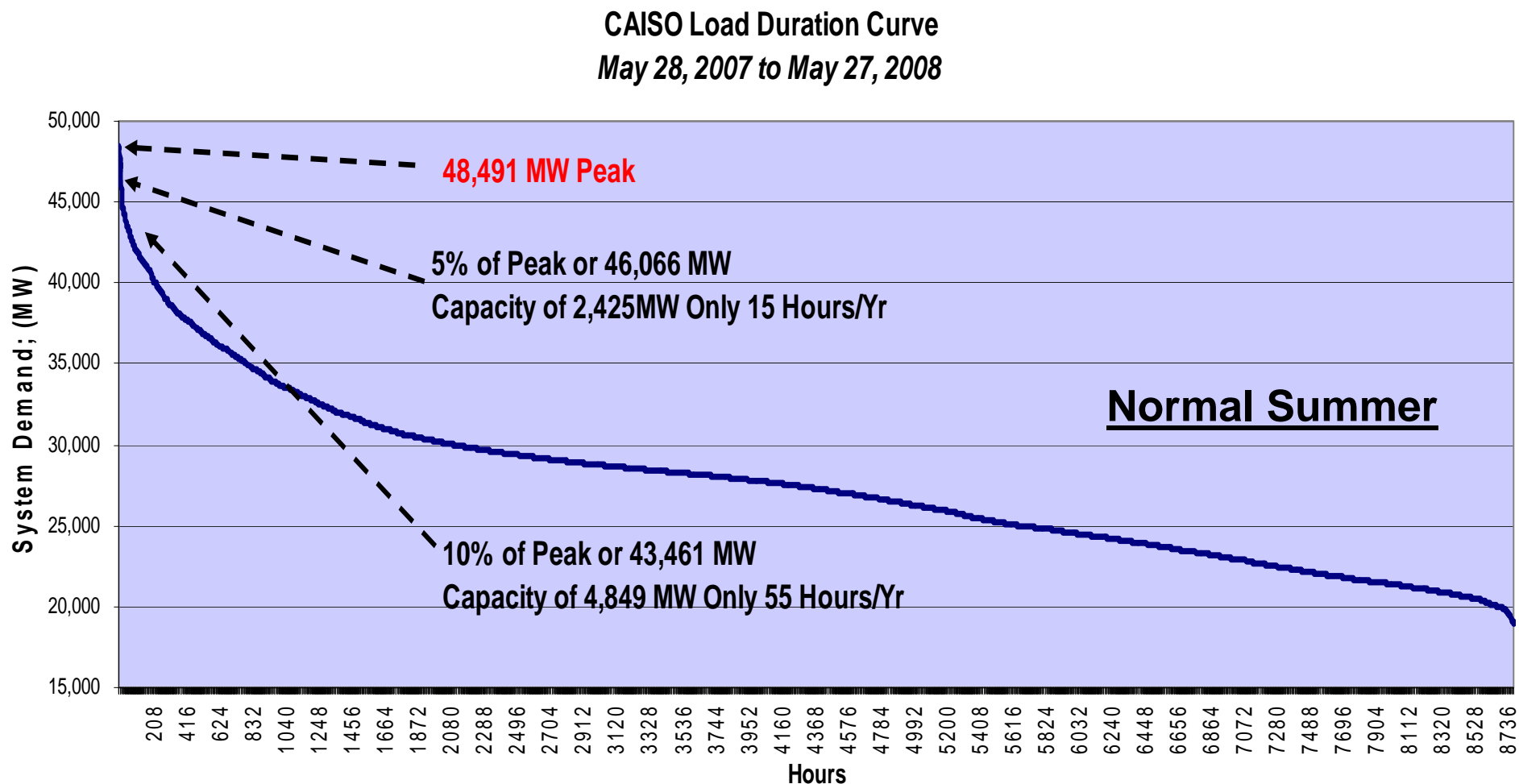
- Reduces start-up and minimum load costs associated with committing units to meet forecasted demand
- Prevents triggering scarcity pricing

## **Provides Reliability Services to the Grid**

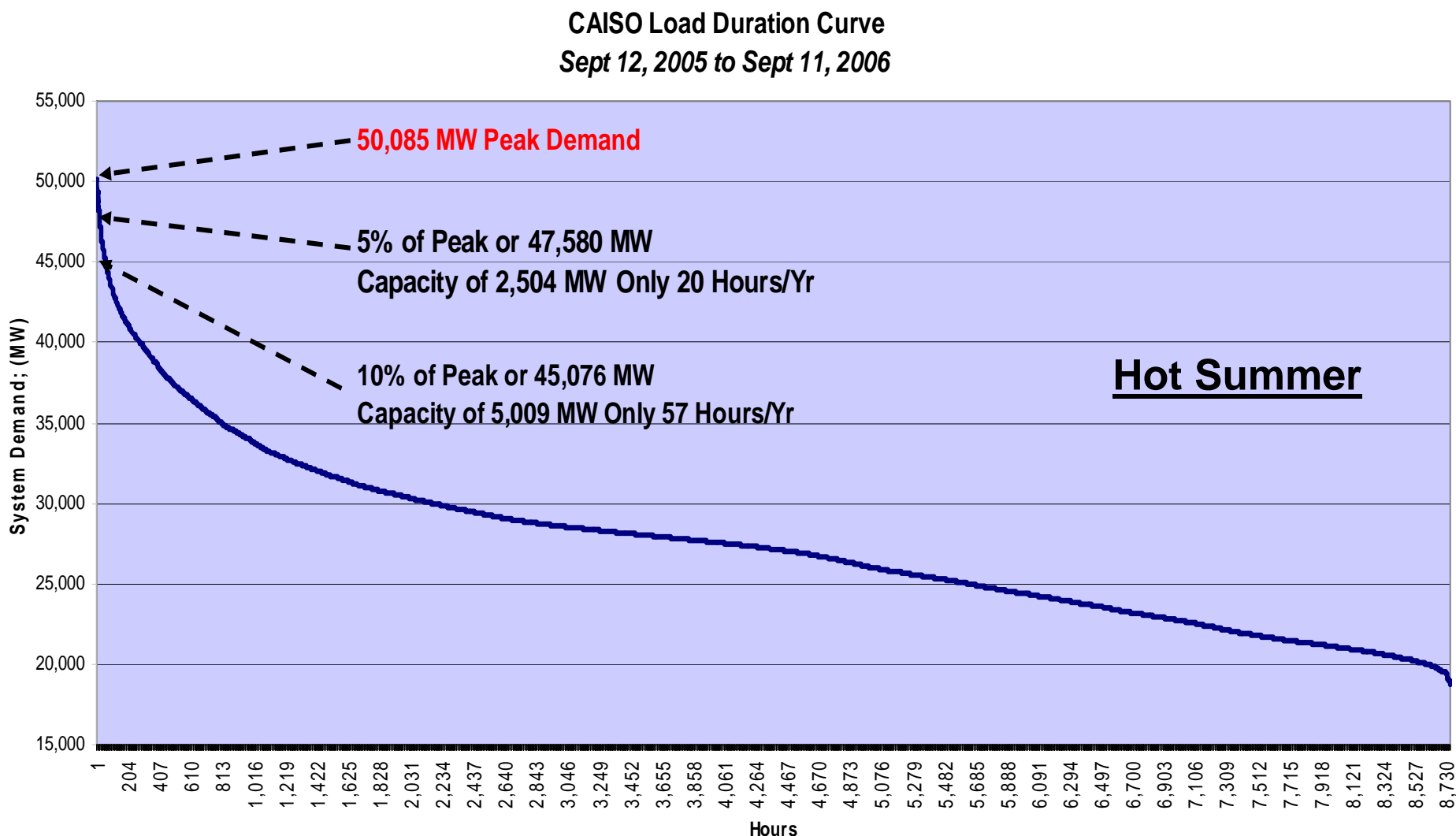
- Adds additional competitive resources into the day-ahead and real-time energy and ancillary service markets
- Prevents undesirable economic impacts associated with taking out-of-market actions to operate the system



# Translating the Benefits- Reducing Peak Demand

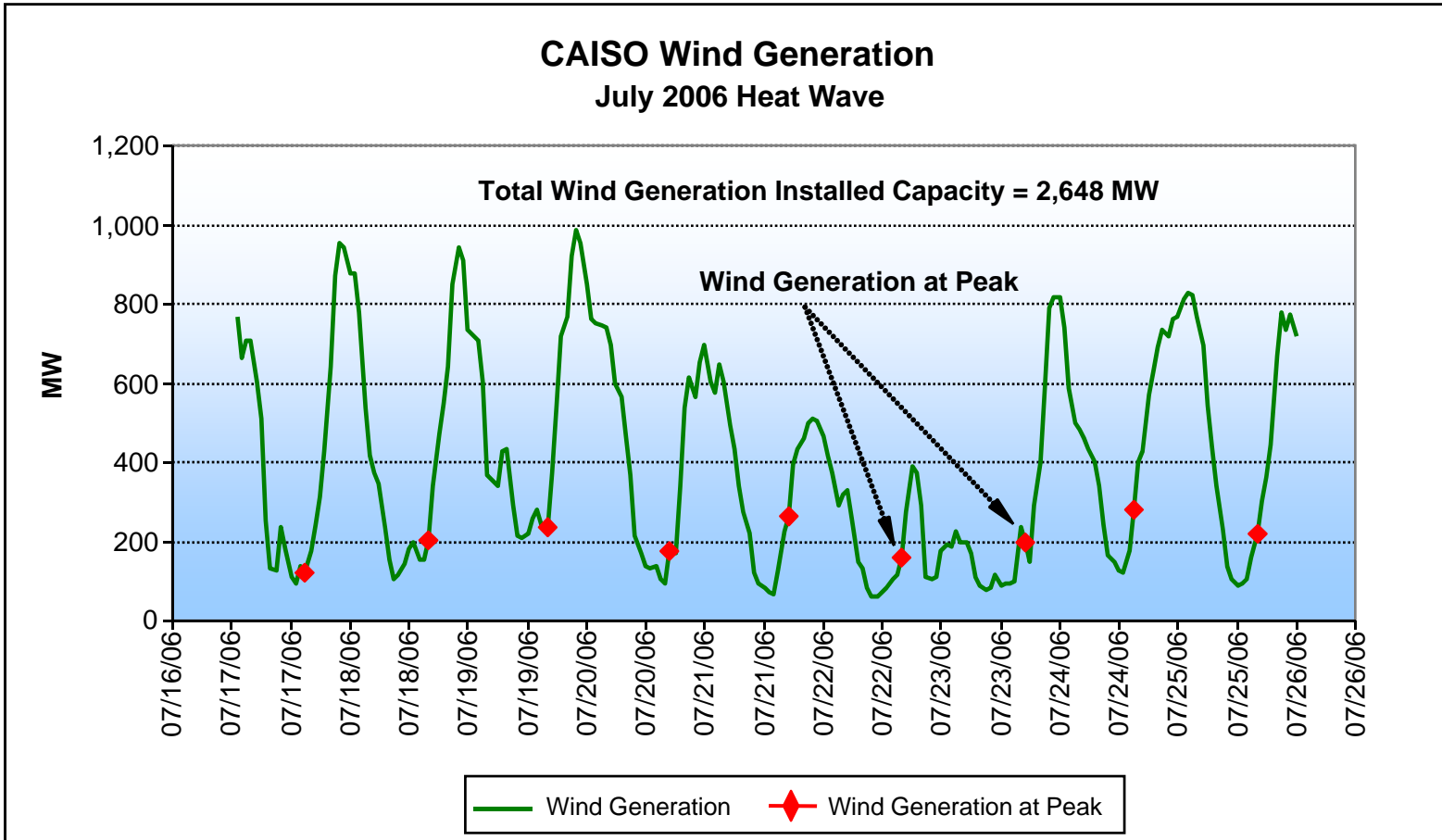


# Translating the Benefits- Reducing Peak Demand





# Integrating Intermittent Renewable Resources



# Market Integration will Directly Link DR to Reliability

- 🌐 Treat demand and supply resources comparably, allowing different resource types to compete
- 🌐 Reduce barriers through use of standardized systems, tools and market rules and procure defined products
- 🌐 Allow access to a diverse set of participants
- 🌐 Provides large, liquid markets that accommodate various resource types with different operating characteristics
- 🌐 Provides price transparency and value determination